

# EXHIBIT D

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Paper 16  
Date: May 14, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,  
Petitioner,

v.

SINGULAR COMPUTING LLC,  
Patent Owner.

IPR2021-00179  
Patent 8,407,273 B2

Before JUSTIN T. ARBES, KRISTI L. R. SAWERT, and  
JASON M. REPKO, *Administrative Patent Judges*.

PER CURIAM.

DECISION  
Granting Institution of *Inter Partes* Review  
*35 U.S.C. § 314*

I. INTRODUCTION

A. *Background and Summary*

Petitioner Google LLC filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–26, 28, 32–61, 63, and 67–70 of U.S. Patent No. 8,407,273 B2 (Ex. 1001, “the ’273 patent”) pursuant to 35 U.S.C. § 311(a). Patent Owner Singular Computing LLC filed a Preliminary Response (Paper 9, “Prelim. Resp.”) pursuant to 35 U.S.C. § 313. Petitioner

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the art would have had “at least a bachelor’s degree in Electrical Engineering, Computer Engineering, Applied Mathematics, or the equivalent, and at least two years of academic or industry experience in computer architecture.” Pet. 7–8. Patent Owner does not address the level of ordinary skill in the art in its Preliminary Response. Based on the record presented, including our review of the ’273 patent and the types of problems and solutions described in the ’273 patent and cited prior art, we agree with Petitioner’s proposed definition of the level of ordinary skill in the art with one exception. Arguably, the term “at least” creates unnecessary ambiguity. Thus, we delete that term from Petitioner’s definition, and otherwise apply Petitioner’s definition for purposes of this Decision. *See, e.g.*, Ex. 1001, col. 1, l. 26–col. 2, l. 7 (describing in the “Background” section of the ’273 patent various conventional methods of computation and their alleged deficiencies).

#### *B. Claim Construction*

We construe the challenged claims

using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b) (2020). We need to construe only those terms “that are in controversy, and only to the extent necessary to resolve the controversy.” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Petitioner states that the terms of the challenged claims should be “given their ordinary and customary meaning as

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understood by a [person of ordinary skill in the art] in accordance with the specification and prosecution history,” but does not propose any express constructions. Pet. 8. Patent Owner disputes the construction of “low precision high dynamic range (LPHDR) execution unit” that Petitioner proposed in the related district court case (i.e., “low precision and high dynamic range processing element designed to perform arithmetic operations on numerical values”), arguing that Dockser does not teach an LPHDR execution unit because “the processing element itself must be fairly characterized as ‘low precision’” and cannot be an execution unit “whose subprecision can be selectively reduced.” Prelim. Resp. 14 (citing Ex. 2001, 13–17) (emphasis omitted). We conclude that no terms require express construction at this time, and address the parties’ arguments regarding whether Dockser teaches the recited LPHDR execution unit below.

*See infra* Section II.C.2.

### C. Obviousness Ground Based on Dockser

Petitioner contends that claims 1, 2, 21–24, 26, and 28 are unpatentable over Dockser under 35 U.S.C. § 103(a), citing the testimony of Richard Goodin, P.E., as support. Pet. 8–38 (citing Ex. 1003). We are persuaded that Petitioner has established a reasonable likelihood of prevailing on its asserted ground for the reasons explained below.

#### 1. Dockser

Dockser discloses performing floating-point operations with a floating-point processor having “selectable subprecision.” Ex. 1007, code (57), ¶¶ 15, 17. “A floating-point representation of a number commonly includes a sign component, an exponent, and a mantissa. To find